

# Site Visit Report

Under the *European Union (Drinking Water) Regulations 2023*, the Environmental Protection Agency (EPA) is the supervisory authority in relation to Uisce Éireann and its role in the provision of public drinking water supplies. This audit was carried out to assess the performance of Uisce Éireann in providing clean and wholesome water to the public water supply named below.

The audit process is a sample of the performance of a water treatment plant and public water supply on a given date.

Water Supply Zone	
<b>Name of Installation</b>	West Clare RWS (New WTP)
<b>Organisation</b>	Uisce Éireann
<b>Scheme Code</b>	0300PUB1066
<b>County</b>	Clare
<b>Site Visit Reference No.</b>	SV32857

Report Detail	
<b>Issue Date</b>	19/08/2025
<b>Prepared By</b>	Orla Harrington

Site Visit Detail			
<b>Date Of Inspection</b>	29/07/2025	<b>Announced</b>	Yes
<b>Time In</b>	11:00	<b>Time Out</b>	12:00
<b>EPA Inspector(s)</b>	Orla Harrington		
<b>Additional Visitors</b>			
<b>Company Personnel</b>	Uisce Éireann: Tommy Roche, Darragh Conneely, Flan Real, Susie McGuinness.  Clare County Council (working in partnership with Uisce Éireann): Pat McLoughlin.		

## > Summary of Key Findings

1. There have been recurring exceedances of the manganese parametric value in the West Clare regional water supply (new) water treatment plant since 2023. On 07/07/25 Uisce Éireann installed a new potassium permanganate dosing system for manganese removal and are now in the commissioning phase. Uisce Éireann have provided a commissioning completion date of Quarter 4 2025.
2. The supply is on the EPA's remedial action list due to persistent exceedances of the trihalomethane parametric value specified in the European Union (Drinking Water) Regulations 2023. While optimisation of existing coagulation and clarification processes are ongoing, Uisce Éireann have a powdered activated carbon production trial scheduled for mid August as an additional treatment process to enhance removal of trihalomethane precursors. Uisce Éireann have provided a completion date for this trial of Quarter 4 2025.
3. The manganese monitoring involves discrepancies between different third party laboratories. Uisce Éireann advised that this may be attributed to (i) lack of sample preservation; (ii) residual chlorine interfering with manganese and (iii) sample contamination. Uisce Éireann have internal sampling and monitoring ongoing at the plant and network to resolve these discrepancies and ensure accurate assessment of manganese levels in drinking water.

## > Introduction

The West Clare Regional Water Supply (RWS) new water treatment plant (WTP) serves a population of 8,702 with a volume of approximately 14,888 m<sup>3</sup>/day from the water source at Doolough Lake. Treatment consists of pH correction, coagulation, flocculation, clarification, rapid gravity filtration, chlorination and fluoridation. There is sludge treatment onsite consisting of a picket fence thickener and dewatering units.

The supply is on the EPA's remedial action list due to trihalomethanes (THM) and audit observations in relation to treatment and management issues.

The audit was carried out to assess Uisce Éireann's progress under the EPA's remedial action list and its response to a Direction under Reg 27(1) issued by the EPA on 19/11/2024, requiring an Action Programme with timelines for achieving trihalomethane compliance. The audit was also conducted in response to manganese failures detected at the water treatment plant and in the distribution network and to follow up on corrective actions taken by Uisce Éireann.

Uisce Éireann plans to rationalise West Clare (old) WTP and connect to West Clare (new) WTP as an alternative source of clean and wholesome drinking water. Uisce Éireann have provided a completion date of Quarter 2 2032 for the rationalisation of West Clare (old WTP).

## > Supply Zones Areas Inspected

Site areas and records relevant to manganese and trihalomethane mitigation were inspected during the audit, including the potassium permanganate dosing system, rapid gravity filters and disinfection.



## 1. Reservoirs and Distribution Networks

1.1

Are reservoirs adequately inspected and maintained?

**Answer**

No

**Comment**

1. Uisce Éireann notified the EPA of six manganese exceedances at Kilrush reservoir between 21/03/2025 and 18/07/2025 with results ranging between 94 ug/l and 218 ug/l. Uisce Éireann advised that the Kilrush reservoir is next on their cleaning and maintenance programme. A timeframe for completion could not be provided at the audit.



2.1

Is the treatment plant optimised for the removal of manganese?

Answer

No

**Comment**

1. There have been recurring exceedances of the manganese parametric value at West Clare (new WTP) and network since 03/03/2023. Exceedances with values of between 51 ug/l and 6,650 ug/l have been detected in monitoring. The manganese failure of 6,650 ug/l in the final water was notified to the EPA on 15/09/2023. Uisce Éireann's and Clare County Council's investigation into that exceedance cited the use of a non-representative sampling location as the cause and the tap was subsequently disconnected.

2. In 2025 exceedance's of the manganese parametric value of 50ug/l were detected in 33 samples taken between 10/01/2025 and 18/07/2025. It is noted that 20 of the samples had results above the WHO health based guideline value of 80 ug/l, ranging between 81 ug/l and 231 ug/l. At the audit Uisce Éireann advised that following consultation with the HSE, flushing of the affected portion of the network was carried out, followed by resampling.

3. Uisce Éireann installed a potassium permanganate (KMnO<sub>4</sub>) dosing system post clarifiers and pre rapid gravity filters at the plant in July 2025 and it is currently undergoing the commissioning phase. Weekly sampling is carried out at four locations on the network and daily sampling is carried out at five locations at the plant as part of the water quality verification programme. While manganese levels have decreased overall since the KMnO<sub>4</sub> dosing was installed, compliance has not yet been reliably achieved with the parametric value of 50ug/l. Uisce Éireann are improving the oxidation of manganese ahead of the filtration stage, by carrying out jar testing to determine optimum KMnO<sub>4</sub> dosing required. Uisce Éireann have noted no change to the efficiency of the filters being caused by KMnO<sub>4</sub> dosing. The estimated completion date for commissioning of the KMnO<sub>4</sub> dosing system is Quarter 4 2025. At the audit, it was noted that there is a lack of a standby pump for KMnO<sub>4</sub> dosing.

4. Two manganese monitors have been installed on the raw and final water. These monitors take a reading every hour and are currently undergoing commissioning. Uisce Éireann advised that these monitors will eventually be linked to the KMnO<sub>4</sub> dosing system to prevent under- and over-dosing, allowing the system to automatically adjust to oxidise the manganese into solid form that can be filtered out.

2.2

Is the network adequately managed to prevent exceedances of the manganese parametric value?

Answer

No

**Comment**

1. Uisce Éireann monitoring of the West Clare (new WTP) carried out in the distribution network in 2025 showed failure to comply with the manganese parametric value of 50 ug/l set out in the Drinking Water Regulations 2023. Exceedances with values of between 51 ug/l and 231 ug/l had been detected in monitoring. Weekly sampling is carried out at four locations on the network.

2. Uisce Éireann stated that the extensive mains network is prone to regular mains bursts which contribute to the manganese exceedances in the network as the sediment is disturbed. Uisce Éireann could not provide a timeframe for when the next mains replacement would be complete.

3. A full scour and flush of the network is scheduled for Quarter 4 2025. Water shortages have meant that network flushing is not viable during the summer months.

4. The manganese monitoring involves discrepancies between different third party laboratories. Uisce Éireann advised that this may be attributed to (i) lack of sample preservation; (ii) residual chlorine interfering with manganese and (iii) sample contamination. Uisce Éireann have internal sampling and monitoring ongoing at the plant and network to resolve these discrepancies and ensure accurate assessment of manganese levels in drinking water.



### 3. Supply on the Remedial Action List

3.1

Do the audit findings support progress made with the Remedial Action List upgrades?

Answer

Yes

**Comment**

1. The supply is on the EPA's RAL due to persistent exceedances of the THM parametric value specified in the European Union (Drinking Water) Regulations 2023 and a second RAL category was assigned for EPA Audit Observations - Treatment and Management issues.

2. West Clare (new WTP) has undergone extensive improvements on the operation, control and treatment of the plant under the RAL action programme to enhance water quality as follows: upgrade of coagulation, filtration and coagulation process, installation of a new flocculation tank, tube settlers in clarifiers, improved residual treatment, process control/SCADA improvements, reservoir cleaning programme, increased frequency of monitoring for manganese and THM's. The raw water supply is from Doolough Lake and while the upgrades make a difference to the UVT levels in the water, the risk of THM formation remains. Uisce Éireann attribute the main cause of the THM failures to be associated with reduced flow and increased water age of the drinking water in the 28km of 750mm trunk watermain.

3. A trial using powdered activated carbon (PAC) for use as an additional treatment process to enhance THM precursor removal is scheduled for completion in August 2025. Uisce Éireann advised that successful results may lead to infrastructural changes so that bulk PAC can be received and managed at the plant. However if this trial is unsuccessful and additional THM precursor removal is necessary, a scope for further capital investment will be prepared and additional works may be required. Uisce Éireann have provided a projected date of completion of the works and verification as 30/06/2030.

4. There have been six no. THM exceedances notified to the EPA in 2025 with results ranging between 102 ug/l and 137 ug/l.

5. Uisce Éireann's progress towards completing the RAL action programme is tracked under the six-monthly RAL updates and the current audit recommendations.

## Recommendations

<b>Subject</b>	West Clare (new WTP) - Audit Report	<b>Due Date</b>	19/09/2025
<b>Action Text</b>	<p><b>Uisce Éireann is responsible for ensuring a clean and wholesome supply of drinking water and should implement the following recommendations without delay.</b></p> <ol style="list-style-type: none"> <li>1. Continue to provide the six-monthly updates on progress to address the RAL categories of THM and EPA audit observations in the West Clare (new WTP) supply. These updates should include (i) progress with short and medium term actions; (ii) results of THM and manganese monitoring at the plant, reservoirs and network in support of RAL removal and (iii) continue to notify the HSE and EPA of all exceedances.</li> <li>2. Complete the powdered activated carbon trial and report to the EPA on the outcome.</li> <li>3. Manganese: (i) continue to undertake daily manganese monitoring at the plant and weekly in the network; (ii) complete the commissioning of the potassium permanganate dosing system; (iii) progress cleaning and scouring of pipelines, reservoirs to remove manganese sedimentation; (iv) finalise commissioning of the manganese monitors, ensure they are linked to SCADA and alarmed appropriately.</li> <li>4. Confirm that the discrepancies between monitoring undertaken by third part laboratories has been resolved.</li> <li>5. (i) Provide a schedule for mains replacement works up until end of 2026. The schedule should focus on parts of the network particularly affected by manganese and (ii) ensure the scour and flush programme planned for the network is complete by Q4 2025.</li> <li>6. (i) Confirm that the Kilrush reservoir has been inspected and cleaned; and (ii) Ensure that all reservoirs supplied by the West Clare (new WTP) are included in the Uisce Éireann Reservoir inspection and maintenance schedule.</li> </ol> <p><b>Actions required by Uisce Éireann</b></p> <p>During the audit, Uisce Éireann representatives were advised of the audit findings and that action must be taken by Uisce Éireann to address the issues raised.</p> <p>Uisce Éireann should submit a report to the EPA on or before 19/09/2025 detailing the actions taken and planned, with timescales, to close out the above recommendations.</p> <p>The EPA advises that the findings and recommendations from this audit report should, where relevant, be addressed at other public water supplies.</p>		